

WHAT IS CLAIMED IS:

- 1                   1.       An isolated nucleic acid encoding an ABCG8 polypeptide, said  
2 polypeptide comprising an amino acid sequence that is at least about 70% identical to an  
3 amino acid sequence as set forth in SEQ ID NO:4 or 8.
- 1                   2.       The nucleic acid of claim 1, wherein said polypeptide specifically  
2 binds to polyclonal antibodies generated against a polypeptide that comprises an amino  
3 acid sequence selected from the group consisting of SEQ ID NO:4 and SEQ ID NO:8.
- 1                   3.       The nucleic acid of claim 1, wherein said polypeptide comprises an  
2 amino acid sequence selected from the group consisting of SEQ ID NO:4 and SEQ ID  
3 NO:8.
- 1                   4.       The nucleic acid of claim 1, wherein said polypeptide forms a  
2 dimer with a second ABC polypeptide, and wherein said dimer exhibits sterol transport  
3 activity.
- 1                   5.       The nucleic acid of claim 4, wherein said dimer is a heterodimer.
- 1                   6.       The nucleic acid of claim 4, wherein said sterol is cholesterol.
- 1                   7.       The nucleic acid of claim 5, wherein said second ABC polypeptide  
2 is an ABCG5 polypeptide.
- 1                   8.       The nucleic acid of claim 7, wherein said ABCG5 polypeptide  
2 comprises an amino acid sequence that is at least about 70% identical to an amino acid  
3 sequence as set forth in SEQ ID NO:2 or 6.
- 1                   9.       The nucleic acid of claim 7, wherein said ABCG5 polypeptide  
2 selectively binds to polyclonal antibodies generated against a polypeptide comprising an  
3 amino acid sequence as set forth in SEQ ID NO:2 or 6.
- 1                   10.      The nucleic acid of claim 7, wherein said ABCG5 polypeptide  
2 comprises an amino acid sequence selected from the group consisting of SEQ ID NO:2  
3 and SEQ ID NO:6.

1                    11.     The nucleic acid of claim 7, wherein said ABCG5 polypeptide is  
2 encoded by a nucleic acid that hybridizes under moderately stringent conditions to a  
3 nucleic acid comprising a nucleotide sequence as set forth in SEQ ID NO:1 or 5.

1                    12.     The nucleic acid of claim 7, wherein said ABCG5 polypeptide is  
2 encoded by a nucleic acid that comprises a nucleotide sequence that is at least about 70%  
3 identical to a sequence as set forth in SEQ ID NO:1 or 5.

1                    13.     The nucleic acid of claim 1, wherein said nucleic acid hybridizes  
2 under moderately stringent hybridization conditions to a nucleic acid comprising a  
3 nucleotide sequence as set forth in SEQ ID NO:3 or 7.

1                    14.     The nucleic acid of claim 13, wherein said nucleic acid hybridizes  
2 under stringent hybridization conditions to a nucleic acid comprising a nucleotide  
3 sequence as set forth in SEQ ID NO:3 or 7.

1                    15.     The nucleic acid of claim 1, wherein said nucleic acid comprises a  
2 nucleotide sequence at least about 70% identical to a sequence as set forth in SEQ ID  
3 NO:3 or 7.

1                    16.     The nucleic acid of claim 1, wherein said nucleic acid comprises a  
2 nucleotide sequence as set forth in SEQ ID NO:3 or 7.

1                    17.     The nucleic acid of claim 1, wherein said nucleic acid is from a  
2 mouse or a human.

1                    18.     The nucleic acid of claim 1, wherein said nucleic acid is expressed  
2 in the intestine or in the liver in the presence of an LXR agonist.

1                    19.     The nucleic acid of claim 1, wherein said nucleic acid is expressed  
2 in a tissue selected from the group consisting of liver, jejunum, ileum, and duodenum.

1                    20.     An expression cassette comprising the nucleic acid of claim 1  
2 operably linked to a promoter.

1                    21.     An isolated cell comprising the expression cassette of claim 20.

1                   22.     An isolated ABCG8 polypeptide, said polypeptide comprising an  
2 amino acid sequence that is at least about 70% identical to an amino acid sequence as set  
3 forth in SEQ ID NO:4 or 8.

1                   23.     The isolated polypeptide of claim 22, wherein said polypeptide  
2 selectively binds to polyclonal antibodies generated against a polypeptide comprising an  
3 amino acid sequence as set forth in SEQ ID NO:4 or 8.

1                   24.     The isolated polypeptide of claim 22, wherein said polypeptide  
2 comprises an amino acid sequence as set forth in SEQ ID NO:4 or 8.

1                   25.     The isolated polypeptide of claim 22, wherein said polypeptide  
2 forms a dimer with a second ABC polypeptide, and wherein said dimer exhibits sterol  
3 transport activity.

1                   26.     The isolated polypeptide of claim 25, wherein said dimer is a  
2 heterodimer.

1                   27.     The isolated polypeptide of claim 26, wherein said second ABC  
2 polypeptide is ABCG5.

1                   28.     The isolated polypeptide of claim 27, wherein said ABCG5  
2 polypeptide comprises an amino acid sequence that is at least about 70% identical to an  
3 amino acid sequence as set forth in SEQ ID NO:2 or 6.

1                   29.     The isolated polypeptide of claim 27, wherein said ABCG5  
2 polypeptide selectively binds to polyclonal antibodies generated against a polypeptide  
3 comprising an amino acid sequence as set forth in SEQ ID NO:2 or 6.

1                   30.     The isolated polypeptide of claim 27, wherein said ABCG5  
2 polypeptide comprises an amino acid sequence selected from the group consisting of  
3 SEQ ID NO:2 and SEQ ID NO:6

1                   31.     The isolated polypeptide of claim 25, wherein said sterol is  
2 cholesterol.

1                   32.     The isolated polypeptide of claim 22, wherein said polypeptide is  
2 expressed in the intestine or in the liver in the presence of an LXR agonist.

1                   33.     The isolated polypeptide of claim 22, wherein said polypeptide is  
2 expressed in a tissue selected from the group consisting of the liver, jejunum, ileum, and  
3 duodenum.

1                   34.     The isolated polypeptide of claim 22, wherein said polypeptide is  
2 from a mouse or a human.

1                   35.     An antibody generated against the isolated polypeptide of claim 22.

1                   36.     A method of making an ABCG8 polypeptide, the method  
2 comprising:  
3                   (i) introducing a nucleic acid of claim 1 into a host cell or cellular extract;  
4 and  
5                   (ii) incubating said host cell or cellular extract under conditions such that  
6 said ABCG8 polypeptide is expressed in the host cell or cellular extract.

1                   37.     The method of claim 36, further comprising recovering the ABCG8  
2 polypeptide from the host cell or cellular extract.

1                   38.     A method of identifying a compound useful in the treatment or  
2 prevention of a sterol-related disorder, said method comprising contacting an ABCG8  
3 polypeptide with a test agent, and determining the functional effect of said test agent upon  
4 said polypeptide, wherein a functional effect exerted on said polypeptide by said test  
5 agent indicates that said test agent is a compound useful in the treatment or prevention of  
6 said sterol-related disorder.

1                   39.     The method of claim 38, wherein said sterol is cholesterol.

1                   40.     The method of claim 38, wherein said polypeptide comprises an  
2 amino acid sequence that is at least about 70% identical to an amino acid sequence as set  
3 forth in SEQ ID NO:4 or 8.

1                   41.     The method of claim 38, wherein said polypeptide is present in a  
2 cell or cell membrane.





1                   64.     The method of claim 61, wherein said sterol-related disorder is  
2     selected from the group consisting of hypercholesterolemia, hyperlipidemia, gall stones,  
3     HDL deficiency, atherosclerosis, and nutritional deficiencies.

1                   65.     The method of claim 61, wherein said compound produces a  
2     decrease in the amount of dietary sterol that is absorbed in said mammal.

1                   66.     The method of claim 61, wherein said compound produces a  
2     decrease in the amount of sterol that is retained in the liver of said mammal.

1                   67.     The method of claim 61, wherein said compound is identified using  
2     the method of claim 38 or 48.

1                   68.     The method of claim 61, wherein said compound causes an  
2     increase in LXR or RXR activity within cells of said mammal.

1                   69.     A method of prescreening to identify a candidate therapeutic agent  
2     that modulates ABCG8 activity in a mammal, the method comprising:

3                   providing a cell which comprises an ABCG8 polypeptide; and  
4                   a test compound; and

5                   determining whether the amount of sterol transport activity in said cell is  
6     increased or decreased in the presence of the test compound relative to the activity in the  
7     absence of the test compound;

8                   wherein a test compound that causes an increase or decrease in the amount  
9     of sterol transport activity is a candidate therapeutic agent for modulation of ABCG8  
10    activity in a mammal.

1                   70.     The method of claim 69, further comprising a secondary step, wherein  
2     said test compound is administered to a mammal, and the absorption of dietary sterol in said  
3     mammal is detected.